

# Tactically Responsive Firepower

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*It takes an Army to deter a war.*

—US Army Chief of Staff General Eric K. Shinseki

**I**F THE US ARMY is to deter war in the 21st century, it must embrace its largely ignored amphibious warfare responsibilities and focus doctrine and capabilities on rapidly projecting power to dominate littoral (coastal) regions. The most effective method for the Army to achieve littoral deterrence in the near term is through deploying interim brigade combat teams (IBCTs) as part of an integrated, synchronized joint task force (JTF) to secure port facilities and airfields.

Since 1990 US forces have been involved in 50 crises around the world, most supported by Marine and Navy amphibious forces deployed to littoral regions. About 70 percent of the world's population lives within 75 miles of a coastline. The rapid growth of megacities in the littorals and resultant avalanche of changing demographics, competition for resources and indigenous tensions have produced regions plagued by strife and conflict. Littoral operations are expected to be the norm for the 21st century.

However, successfully performing the littoral combat mission requires tactically responsive naval surface fire support (NSFS). Operations in Kosovo demonstrated that bad weather can wipe out air support. Global Positioning System (GPS)-guided, precision-guided munitions (PGMs) could not destroy Serbian ground forces. NATO employed more than 10,000 PGMs and destroyed only 14 tanks, 18 armored personnel carriers (APCs) and 20 artillery pieces.<sup>1</sup> However, they proved effective when employed against stationary targets such as bridges, power plants, railroads and the Chinese Embassy. Unfortunately, "The Navy admits that it currently has no credible surface fire capabilities to support forced-entry from the sea and inland operations by

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US Marine Corps (USMC) and Army forces."<sup>2</sup> Furthermore, the Navy cannot provide tactically responsive NSFS to troops ashore without the major-caliber guns of the *Iowa*-class battleships, which the Navy refuses to maintain in active service. For littoral conflicts, the *Iowa*-class battleships should be designated and funded as joint national assets.

The Army and USMC are implementing strategic and operational maneuver concepts to meet requirements for increased mobility. The Army's near-term response is the Interim Force while the Objective Force takes shape. The USMC's near-term and long-term strategies are Marine Corps Strategy 21 and Operational Maneuver From the Sea (OMFTS). These revolutionary maneuver concepts could significantly enhance US ability to wage and win strategic and operational war. However, the inability to provide assaulting forces with reliable, tactically responsive, all-weather fire support prevents the United States from effectively projecting power and risks needless casualties, being defeated or both.

Regardless of how a force arrives, it deploys on the ground and fights tactically. Fire support to soldiers and Marines ashore require reliable, high-volume, tactically responsive, lethal, all-weather systems. Neither maneuver concept adequately considers or provides fire support that meets the

The views expressed in this article are those of the author and do not purport to reflect the position of the Department of the Army, the Department of Defense or any other government office or agency.—Editor

## Floating Fortress

During the 1982 Falklands-Malvinas War, Exocet antiship missiles and conventional bombs struck 16 British warships, sinking seven and severely damaging three. A containership was sunk with thousands of tons of stores and ammunition as well as half the helicopters dedicated to the land force. British carriers were forced to operate at the extreme range of the invasion area.

The vulnerability of modern, lightly armored warships to determined air attack had changed little since World War II. Yet, even as the Argentine and British forces fought in the South Atlantic, work began at the Long Beach Naval Shipyard to modernize a warship largely impervious to conventional weapons. The USS *New Jersey* was the first of four *Iowa*-class battleships returned to active service as part of President Ronald Reagan's maritime strategy.

Built during World War II, these vessels still had as much as 20 years of service life remaining. In addition, antiship weapons had been designed over the decades to counter increasingly thin-skinned warships. With a 6-inch armor deck and hull and citadel armor ranging up to 14.5 inches thick, the battleships would be able to engage in sustained, all-weather operations in even the most deadly environments. All four ships were recommissioned by 1988 with state-of-the-art communications, radar, nuclear-biological-chemical protection, chaff and electronic countermeasures systems. Additional weapons included 16 Harpoon and 32 Tomahawk cruise missiles as well as four 20mm Phalanx systems (similar to the Vulcan). Today, two ships, the *Wisconsin* and *Iowa*, are maintained, ready for activation under the terms of US Public Law 104-106.

Former US Navy Secretary John Lehman believes this level of readiness is insufficient and that the *Wisconsin* and *Iowa* "should be kept in a ready-reserve status, manned by a cadre of regulars and a majority of drilling reservists." In this status, says Lehman, "they could do occasional show-the-flag cruises and rapidly deploy in time of crisis." He dismisses arguments that the ships are too manpower-intensive to be cost-effective: "We manned them in the 1980s with 1,400 officers and men. By manning only two of the four engine rooms, they still make 24 knots and save several hundred crew. With other sensible reductions made possible by newer technology they could be manned with fewer than 800. At whatever manning, there simply is no substitute for those 16-inch guns. On the first salvo they can be in the wrong country, but with drone or aircraft spotting the subsequent rounds have 100-yard or better accuracy."

Lehman points out that "the Exocet can penetrate only 2.75 inches of armor" and that similar missiles "would have no effect against any of the armor of the BBs." He cautions, however, that no amount of protection can prevent all casualties, particularly if hits are made on the less-armored portions of the superstructure. Still, "The only real conventional threat to the BBs," says Lehman, "is the huge under-keel Russian torpedo, but even there, the BBs have triple-layered bottoms. In short, compared to the 1/4-inch steel of the billion-dollar Aegis ships, the BBs are invulnerable."

realities of close combat. In the initial stages of any joint littoral operation, until sufficient time elapses to deploy organic artillery, both services must rely primarily on naval aviation and long-range NSFS, which require more than 10 minutes to respond.

Sometimes "tactical" is so broadly defined that it is dangerously imprecise. US Army Field Manual (FM) 100-15, *Corps Operations*, defines the corps "as the largest tactical unit in the US Army," a definition unchanged in more than 60 years.<sup>3</sup> Everything from the front-line foxhole to the corps rear area is considered tactical. The close battle, main battle, deep battle and rear battle are all tactical operations but could be up to 90 miles apart. Fire support responsiveness for soldiers in foxholes (or Marines on the beach) is clearly different from what a corps needs for the fight.

The corps- and joint-level task force headquarters have too many communication layers between them and the shooters to be responsive to the close fight and main battle. Although we have sensor-to-shooter connectivity, it is doubtful that high-level responsiveness can be sustained hundreds of times a day across a corps' front. These applications are best suited for high-payoff targets or special operations but cannot reliably support the volume of requests needed for large-scale combat.

Although the corps operates in the field under tactical environmental conditions, due to technological advancements in command, control, communications and computers, intelligence, surveillance and reconnaissance (C<sup>4</sup>ISR), today's corps and corps-sized JTFs conduct an operational level of war and influence an operational battle space. Today's corps can influence an area of operation formerly assigned to numbered US armies in World War II.

Because the range and responsiveness of organic weapon systems is limited, the division should be designated the largest tactical unit. Additionally, the tactical battle space should be redefined to mirror the zones and sectors assigned to divisions. Associated battle areas—the close fight, main fight, deep battle and rear battle—must specify responsive thresholds because time and distance are interdependent, defining criteria. Department of Defense (DOD) Directive 5100.1 sets forth the Army's amphibious mission requirements: "The primary functions of the Army are:

"6.6.1.2.3. To organize, equip and provide Army Forces, in coordination with other Military Services, for joint amphibious . . . operations and to provide for the training of such forces, in accordance with joint doctrines.

"6.6.1.2.3.1. [Develop,] in coordination with other Military Services, doctrines, tactics, techniques, and equipment of interest to the Army for amphibious

operations and not provided for elsewhere.”<sup>4</sup>

Although this directive, as worded, is speaking of World War II, Normandy Beach-like operations, it affords the Army broad latitude to “Develop . . . doctrines, tactics, techniques, and equipment of interest to the Army for [littoral] operations which do not exist or are not addressed” yet are required for successful amphibious operations.<sup>5</sup>

As the USMC’s long-range concept for responding to 21st-century littoral conflicts, OMFTS relies heavily on its ability to launch and support amphibious assaults from ships 70 to 115 miles inland beyond the horizon. Based on a triad of revolutionary lift assets such as the MV-22 Osprey tilt-rotor aircraft, the advanced amphibious assault vehicle (AAAV) and the recently upgraded landing craft, air-cushion (LCAC), OMFTS will project power inland. On 16 November 2000, the USMC publicly revealed its first step toward achieving its long-term vision. Identified as Marine Corps Strategy 21, the Marines’ new goals are bold but achievable: two brigades—almost 40,000 Marines—deployed anywhere in the world, regardless of available infrastructure, ready to operate in one week or less.<sup>6</sup>

### **Amphibious Warfare Today**

Typically, in any littoral scenario, the amphibious ready group (ARG) will deliver the first ground forces most readily available to respond to a littoral crisis. Typically a Marine expeditionary unit/special operations-capable (MEU/SOC), a reinforced infantry battalion, can respond within hours to days, depending on the ARG’s proximity to the crisis. However, the next available Marine force, the Marine expeditionary brigade (MEB), arrives 11 days after the MEU deploys. For crises requiring a force larger than an MEU and sooner than a MEB, the Army’s 82d Airborne Division and IBCTs are ideal. The Army should contribute IBCTs to JTFs responsible for securing port facilities and littoral airfields.

Employing IBCTs to respond to littoral national security interests would not be interpreted as an encroachment on Marine Corps turf. USMC leaders acknowledge that the Corps alone is too small to adequately respond to large-scale crises. Commandant of the Marine Corps General James L. Jones stated: “Marines win battles, the Army wins Wars.”<sup>7</sup> Testifying before the Senate Armed Services Committee during his confirmation hearings, then Lieutenant General Jones said, “There has never been a crowded battlefield. Our complementary relationship with the Army is an important force multiplier for the Nation.”<sup>8</sup>

USMC doctrine clearly describes surface movement for ship-to-objective maneuver (STOM). IBCTs, on the other hand, would primarily use air-

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craft. Parallel capabilities would provide a synergistic force multiplier, especially for JTFs trying to surge combat power quickly.

### **Tactical Fires Not Considered**

Unfortunately, as planning to support IBCTs and OMFTS becomes more definitive, important tactical requirements remain ill-defined, if not neglected. In the Army’s case, the fire support deficiency is highlighted by an October 1999 Deputy Chief of Staff for Operations and Plans (DCSOPS) meeting of the Council of Colonels. Transformation workshops were conducted to “enable early and continuous joint, integrated and overwhelming strategic and operational fires and maneuver, throughout the depth and breadth of the battlespace and across the spectrum of operations.”<sup>9</sup>

The USMC has understood the need to support amphibious operations with tactically responsive fires. On 3 December 1996 the commanding general, Marine Corps Combat Development Command (MCCDC), Quantico, Virginia, Lieutenant General (LtGen) Paul K. Van Riper, submitted requirements for NSFS, calling for responsiveness of 2 minutes, 30 seconds from call for fire to rounds striking the target.<sup>10</sup>

However, changes to the wording of the Marine requirements document raise doubts. In a letter dated 16 June 1999 to the Chief of Naval Operations (N81), new commanding general, MCCDC, then LtGen J.E. Rhodes, redefined this requirement. The requirement now calls for a “system response” of 2 minutes, 30 seconds from the time “the fire direction center receives the call for fire until ordnance is fired or launched.”<sup>11</sup> A munition’s time of flight is excluded from this requirement. The redefinition has had a dramatically negative impact on responsiveness. A ship 1,000 miles away can fire a Tomahawk cruise missile, which takes up to 1 hour, 49 minutes to reach the target, and still meet requirements for NSFS if the missile is launched 2 minutes, 30 seconds after the request. The term “tactical Tomahawk” is an oxymoron and illustrates a lack of appreciation

A Tomahawk cruise missile is launched from the USS *Missouri* during Operation Desert Storm, 17 January 1991.



US Navy

***For a relatively small investment, several battleship upgrades would enable tactically responsive, extended-range joint fires and quickly integrate US and coalition fires—air and indirect. Modernized battleships can integrate and synchronize the joint fires mission end to end.***

for the need for tactically responsive fires.

Even 2 minutes, 30 seconds can seem like a lifetime when you need fire support. Perhaps this is part of the problem. Not enough of today's soldiers have experienced combat, and decisionmakers too often fail to listen to those who have. Recently retired General Barry R. McCaffrey stated, "With only a handful of exceptions, our soldiers have never witnessed a protracted, high-casualty ground campaign. . . . Many of the lessons of Vietnam have been lost, forgotten, or cast aside—deemed inconvenient or irrelevant. . . . It is critical that they learn from, and not repeat, the mistakes of the past."<sup>12</sup>

Testimony of ground combat veterans of Korea and Vietnam; after-action reviews (AARs) from training engagements at the Army's National Training Center (NTC), Fort Irwin, California; and current Army artillery performance standards reveal that the original USMC requirement of 2 minutes, 30 seconds is dead on target. Army fire support performance standards for the Paladin, M109A6, 155mm howitzer specify a 75-second (outside the radius) responsiveness requirement for a "Hip Shoot."<sup>13</sup> Time of flight for 155mm projectiles out to an 18.1-kilometer (km) maximum range (nonsuper-charged, nonrocket-

assisted) is 68.5 seconds, for a total execution responsiveness of 2 minutes, 23.5 seconds—a tougher standard than the USMC requirement.

If this is the current Army standard for tactical fire support responsiveness, if the USMC follows the Army's Artillery School for tactics, techniques and procedures (TTP), and if the US military is always to fight jointly, this fire support standard should also apply to the Navy and support for soldiers and Marines ashore. Additionally, the tactical battle space should be limited to the distance at which fires can range targets and still be responsive in any weather. This designation applies for all ground operations, whether in the littorals or in the Balkans. Doctrine can grow as technology improves so that fire support remains tactically responsive and "be doctrinally sound but not doctrinally bound."<sup>14</sup>

### **Joint Fire Support is Broken**

General Anthony C. Zinni, USMC, commander in chief (CINC) of US Central Command, detailed shortfalls in joint fire support capabilities for forced-entry scenarios. He asked, "How do we employ joint fires when we're building up the force? It's easy to employ joint fires in an exercise where the entire force is already in place."<sup>15</sup> The inability to perform joint fires is not due to a lack of doctrine. Joint Publication 3-09, *Doctrine for Joint Fire Support*, was published 12 May 1998. The inability to provide joint fires stems from a serious lack of weapon systems capable of providing joint fires. Elaborating, Zinni said, "What we need going in is a capability to quickly integrate US and coalition fires—air and indirect fires. . . . The first few days are going to be critical, until we can build up to the point where we have the combat advantage over the enemy."<sup>16</sup>

In a June 2000 interview, Jones stated, "One of the lessons from Kosovo for me was that weather still plays an important role in the ability of a platform to deliver rounds on target, precision or otherwise. . . . Something like 50 percent of the time we were unable to fly to do below-the-clouds close air support."<sup>17</sup>

### **Why NSFS is not Credible**

In the initial stages of a joint littoral operation, until sufficient time elapses to deploy organic artillery assets, both services must rely heavily on air power (primarily naval aviation) for fire support because the Navy cannot provide credible NSFS to support joint Marine and Army amphibious operations. Even "the Navy admits that it currently has no credible surface fire capabilities to support forced-entry from the sea and inland operations by Marine Corps and Army forces."<sup>18</sup> A 1999 Navy Report to Congress reaffirmed this, stating, "[the] Navy does not pos-

sess an operational capability that meets current Marine Corps naval surface fire support requirements.”<sup>19</sup> This statement remains true today. There are two principal reasons why the Navy cannot perform the NSFS mission:

- The Navy’s departure from heavy, armored, major-caliber gunships (battleships with 16-inch guns and cruisers with 12-inch and 8-inch guns) in favor of naval aviation and today’s lightly armored missile ships, such as the USS *Cole*, with small, 5-inch (127mm) guns.

- Its decommissioning of *Iowa*-class battleships in the early 1990s without a comparable replacement.

Retired Colonel James E. Lasswell, former head of experimentation operations, USMC Warfighting Lab, Quantico, Virginia, wrote: “Current [naval fires] systems are too few, too short in range, and inadequate for providing the kind of fire support needed to support any sizable sea-based maneuver operation. War games and experiments have identified serious problems in conducting . . . STOM—forcible entry operations—without a robust naval-fire capability. Littoral penetration points cannot be adequately isolated, counter-battery fires are not sufficient, and responsive fires in support of maneuver are inadequate. . . . Absent the introduction of a significantly improved naval surface fire system, landing forces will continue to rely on air-delivered munitions as the primary fire support instrument during sea-based maneuver operations. This situation will persist until they can drag their own fire support [ashore].”<sup>20</sup>

### Navy NSFS Solutions are Inadequate

Navy solutions to the NSFS gap include two near-term programs—the 5-inch extended-range guided munition (ERGM) and land-attack standard missile (LASM)—and one long-term program—the 155mm advanced gun system (AGS) for the DD 21 land-attack destroyer. According to Lasswell, these programs, “if fully funded and implemented, could put a dent in the requirement.”<sup>21</sup> Soldiers and Marines performing the littoral combat mission do not want fire support that only makes dents in their targets; they want their targets destroyed immediately, anytime, under all weather conditions.

ERGM is part of a \$2.1-billion program to design, test and field a long-range munition for the Navy’s new 5-inch, Mk 45 Mod 4, 62-caliber gun system. The EX-171 is a 12-caliber (61 inches long), 110-pound, rocket-assisted projectile that carries a 19-pound payload of 72 Army M-80 antimateriel/anti-personnel submunitions that will produce a circular destructive pattern on the ground to a planned maximum range of 63 nautical miles in 7 to 8 minutes. Relying on an on-board GPS-updated Inertial Navigation System (INS), ERGM will have an accuracy

The USS *Iowa* fires one of its six starboard 5-inch (127mm) guns during an Atlantic training exercise. While a battleship’s nine 16-inch (406mm) guns work to isolate a beachhead, its 5-inch guns can level precision direct fires just as effectively as they have from World War II through *Desert Storm*.



US Navy

***During the Gulf War, on two occasions, USS Wisconsin’s gunfire forced Iraqis to surrender. Battleships’ impact on Iraqi coastal defenses did not go unnoticed by the Soviets: “Their salvos are producing a ‘strong impression’ on the Iraqis: they are abandoning their coastal positions and pulling back northward tens of kilometers.”***

of 10 to 20 meters. The EX-171 relies on a rocket motor that generates 18 megajoules of energy to reach an altitude of 80,000 to 85,000 feet from where it glides to its target.<sup>22</sup>

The program calls for fitting one gun to each of 29 new *Arleigh Burke*-class destroyers (DDG-51s) beginning in 2001. The Navy plans to retrofit two of the guns on each of 22 *Ticonderoga*-class *Aegis* cruisers (CG-47) to give the ships an ERGM capability. By Fiscal Year (FY) 2005, there will be 26 5-inch, 62-caliber guns in the fleet on 18 DDGs and four cruisers. By FY 09 the program is to be fully fielded.<sup>23</sup>

**Program status.** The ERGM program is deeply mired in technical difficulties, six years behind schedule and significantly over budget. Worse, the rate of fire will likely drop significantly from the promised 12 rounds per minute because of the extreme temperatures generated by firing such a “hot” round. A more realistic estimate is three to four rounds per minute with significant barrel wear.

According to an ERGM program source and confirmed by a senior official, during a six-round, rapid-fire slug test in February 2001, the barrel warped due to extreme overheating and caused the fourth



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round to stick in the barrel. The extreme barrel heat melted the projectile's on-board GPS/INS, but incredibly, the Navy ruled the test a success. Designing an inertial measurement unit, an essential part of the system's GPS guidance package, is also difficult because it must withstand the force of 12,000 Gs as it leaves the gun barrel. To make matters worse, according to a 1997 General Accounting Office letter, "The near-term [ERGM] phase of the [Navy's NSFS] program is not expected or designed to fully meet the fire support requirements recently established by the USMC. A key deficiency is responsiveness."<sup>24</sup> Moreover, Lieutenant General Michael Williams testified on 2 March 2000 that ERGM will not have the necessary lethality.

**Performance deficiencies.** Following are some serious ERGM performance deficiencies:

- **Responsiveness.** Van Riper said, "A consistent concern is time of flight, which could be eight to nine minutes. If the target is mobile, it could disappear even if terminal guidance were available."<sup>25</sup> For instance, an enemy tank traveling 25 miles per hour (mph) will have traveled 3.1 miles in the time it takes ERGM to reach the target from maximum range.

- **Destruction fires.** The 5-inch ERGM (only slightly bigger than a 120mm mortar) holds 72 M-80 submunitions, which are ineffective against hard targets such as tanks, APCs, bunkers, caves and fortifications that soldiers and Marines typically face in littoral regions.

- **Sustained/subsequent operations ashore.** The DDG's on-board storage capacity of only 230 ERGMs cannot support sustained operations ashore. At its sustained rate of 10 rounds per minute, the DDG is out of ammunition after 23 minutes.

- **Volume.** The DDG's single gun cannot achieve the volume required. Van Riper writes of "a need for low-cost, high-volume rounds that can be used to provide close supporting fires to maneuvering land forces. Quantity of fire, on time and on target, has a quality all its own. Precision/terminally guided munitions are needed but not to the exclusion of inexpensive, volume fire munitions. Both precise and less-precise munitions are critical in the 'window of

vulnerability' during the early stages of ship-to-objective maneuver [STOM] when organic artillery is afloat."<sup>26</sup>

- **GPS vulnerability to jamming.** GPS-guided fire support solutions are problematic. Such projectiles are easily jammed, and their small payloads (designed to minimize collateral damage) ensure that the target will not be destroyed when jamming occurs. Relatively low-power jammers can distort navigation out to 120 miles. Iraq successfully used Russian-made jammers to lead Operation *Northern Watch* aircraft off course, and China is also developing a jamming capability. Things will not get better: "GPS jamming is a train wreck waiting to happen. And it's not a question of whether it will happen, but when."<sup>27</sup> Threats could easily and quickly build and deploy cheap but numerous, effective jammers to defeat GPS-guided weapons. Russian-designed, inexpensive GPS jammers are now widely available—one such device can even be purchased through the Internet.

**Land-attack standard missile (LASM).** The supersonic LASM is installed on *Aegis* warships and uses GPS and INS for precision guidance. Program funding for LASM started in FY 00, and LASM initial operating capability is planned for FY 03. The procurement objective is 800 missiles. There have been three flight demonstrations and two warhead arena tests, but missile solutions for fire support are insufficient because they "fail to provide the anticipated responsiveness and volume of fire needed by the landing force."<sup>28</sup> Due to their lengthy mission planning process, missiles are not tactically responsive and are best employed against stationary or fixed C<sup>4</sup>ISR targets. They also are vulnerable to GPS jamming effects. Exorbitant unit costs (\$750,000 to \$1.5 million each) and the number of missiles required to support any real conflict will result in a limited production which, in turn, will quickly be expended, as occurred in Kosovo.

**Advanced gun system (AGS).** The AGS is a 155mm gun weapon system planned for installation in the DD 21 land-attack destroyer, which is still in the design stage. DD 21 will carry two 155mm guns capable of independently firing twelve 200-pound, GPS-guided, ERGM-like rounds per minute, out to 115 miles, from two 750-round automated magazines. However, one of these guns is projected for removal in favor of a vertical launch system to support theater ballistic missile defense.

The first AGS is scheduled for delivery in FY 06, with an initial operating capability of 2008. However, the first DD 21 probably will not be fielded until 2012 or produced in sufficient numbers until after 2020. Even when the systems are fully fielded, "DD 21 will not be able to match the *Iowa*-class battleships

The USS *Missouri* (BB-63) steams alongside the USS *Wisconsin* (BB-64) during operations in the Persian Gulf, January 1991.



US Navy

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in firepower and shock effect.”<sup>29</sup> In the meantime, the absence of NSFS makes the risk to fighting forces ashore “very high right now.”<sup>30</sup> For at least the next 20 years, no options other than modernized battleships will eliminate this very high risk.

### **The Solution**

Currently, only major-caliber guns have the all-weather reliability, lethality and responsiveness to support tactical operations. Such guns are now found only on the Navy's two mothballed *Iowa*-class battleships (USS *Iowa*, BB-61, and USS *Wisconsin*, BB-64). The 16-inch Mark VII gun shoots 1,900-pound, high-capacity, shore-bombardment projectiles out to 24 miles with flight times under 2 minutes. However, with extended-range projectiles, like those in development during the late 1980s and early 1990s, major-caliber guns could deliver projectiles varying in weight (525 to 1,300 pounds) out to 52 statute miles in approximately 2 minutes. This time of flight still leaves sufficient time to develop a fire solution and still put steel on target in 2 minutes, 30 seconds. Tight shooting powders such as the Army's M31 could produce unguided, ballistic circular error probable (CEP) on the order of 250 meters at 52 miles with a lethal radius of approximately 200 meters. Unlike GPS-guided fire support, 16-inch gunfire is timely, not subject to jamming or inclement weather and cannot be shot down.

**Invest in four ships.** The Navy has been reluctant to invest in the capabilities of a small ship class when the equipment developed could not be used elsewhere in the fleet. However, the 16-inch extended-range ammunition is a special case that can be justified economically as well as operationally. The investment pays off during operations that involve a large portion of the Navy's amphibious shipping but only a few of its surface combatants.

Further, implementing laser guidance could transform ballistic projectiles into PGMs that can be guided from a wide range of sources, including the eight remotely piloted vehicles organic to the battleship. This capability will give troops ashore highly reliable fire support in the close fight that is responsive, precise and lethal. Extended-range ballistic projectiles can provide all-weather, lifesaving fire support on time—anytime.

Other major-caliber, extended-range projectiles could be employed to support a proposed division deep-battle responsiveness requirement of 5 minutes. In 1991 the Defense Advanced Research Projects Agency proposed an 11-inch sabot projectile, fired from a 16-inch gun, which would have had a 115-mile projected range and a 4-minute time of flight. Since ballistic accuracy decreases beyond 50 miles, terminal guidance would be necessary to maintain acceptable accuracy. Large-caliber projectiles fired beyond 52 miles would represent transition to the

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operational battle space because of responsiveness.

A snapshot of today's sealift and other movement capabilities shows "only incremental change from the way we had conducted amphibious operations in the 1940s."<sup>31</sup> For some time, amphibious operations would be similar to World War II over-the-beach operations. Unfortunately, without battleships, they will be performed with casualties like those on Omaha Beach, where there was insufficient battleship support.

### Modernized Iowa-Class Battleships

The battleship, with its major-caliber guns, is the only system that can be modernized to meet the many rigorous fire support requirements of 21st-century JTF commanders performing littoral combat missions. For a relatively small investment, several battleship upgrades would enable tactically responsive, extended-range joint fires and quickly integrate US and coalition fires—air and indirect. Modernized battleships can integrate and synchronize the joint fires mission end to end.

**Advanced Field Artillery Tactical Data System (AFATDS).** This Army and USMC automated artillery system plans, executes and tracks fire support missions. A battleship with AFATDS would fill the need for integrating joint fires to support Army and USMC forces engaged in close combat ashore.

**Target-acquisition battery (TAB) radar.** Included in Van Riper's memo was a requirement for

a fire support ship to be configured with TAB radar. A maritime version of the AN/TPQ-37 Firefinder radar could pinpoint enemy artillery and Scud-type weapons engaging ground troops ashore for the battleship's 16-inch guns to destroy immediately.

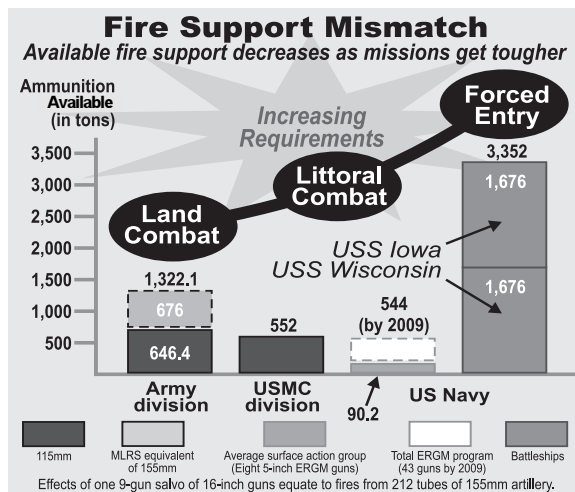
**Vertical-Launch-System (VLS) Tomahawks.** Plans exist to install 96 VLS Tomahawk missiles. The below-deck design significantly increases their survivability and lethality. These missiles would be instrumental in destroying key enemy fixed or stationary C<sup>4</sup>ISR, air defense targets essential in blinding the enemy and "rolling back" enemy defenses.

Detering war and winning wars when deterrence fails is the US military's defining mission. No single weapon system short of nuclear weapons deters aggression like the battleship. For example, during the Iran-Iraq "tanker war" in the 1980s, every time the *Iowa* would enter the Persian Gulf, all the shooting would stop and "all southern Iran would go quiet."<sup>32</sup>

The battleship's effectiveness in winning war is even more impressive. From World War II to the Gulf War, battleships' major-caliber naval gunfire has proven to remove the enemy's will to fight. On 10 June 1944 German Field Marshal Erwin Rommel complained, "Our operations in Normandy are tremendously hampered, and in some places even rendered impossible by the . . . effect of the heavy naval guns . . . [which] is so immense that no operation of any kind is possible in that area."<sup>33</sup> Half a world away, another enemy faced the same frustration. General Tadamichi Kuribayashi, commanding general of Japanese forces in Iwo Jima, telegraphed the Chief of the General Staff that "the violence of the enemy's bombardments is beyond description. . . . The power of the U.S. warships [battleships] . . . makes every landing operation possible to whatever beachhead they like."<sup>34</sup> During the Vietnam War, the *New Jersey's* mere presence so terrorized the North Vietnamese that they insisted it be withdrawn in 1969 because it "impeded peace talks."

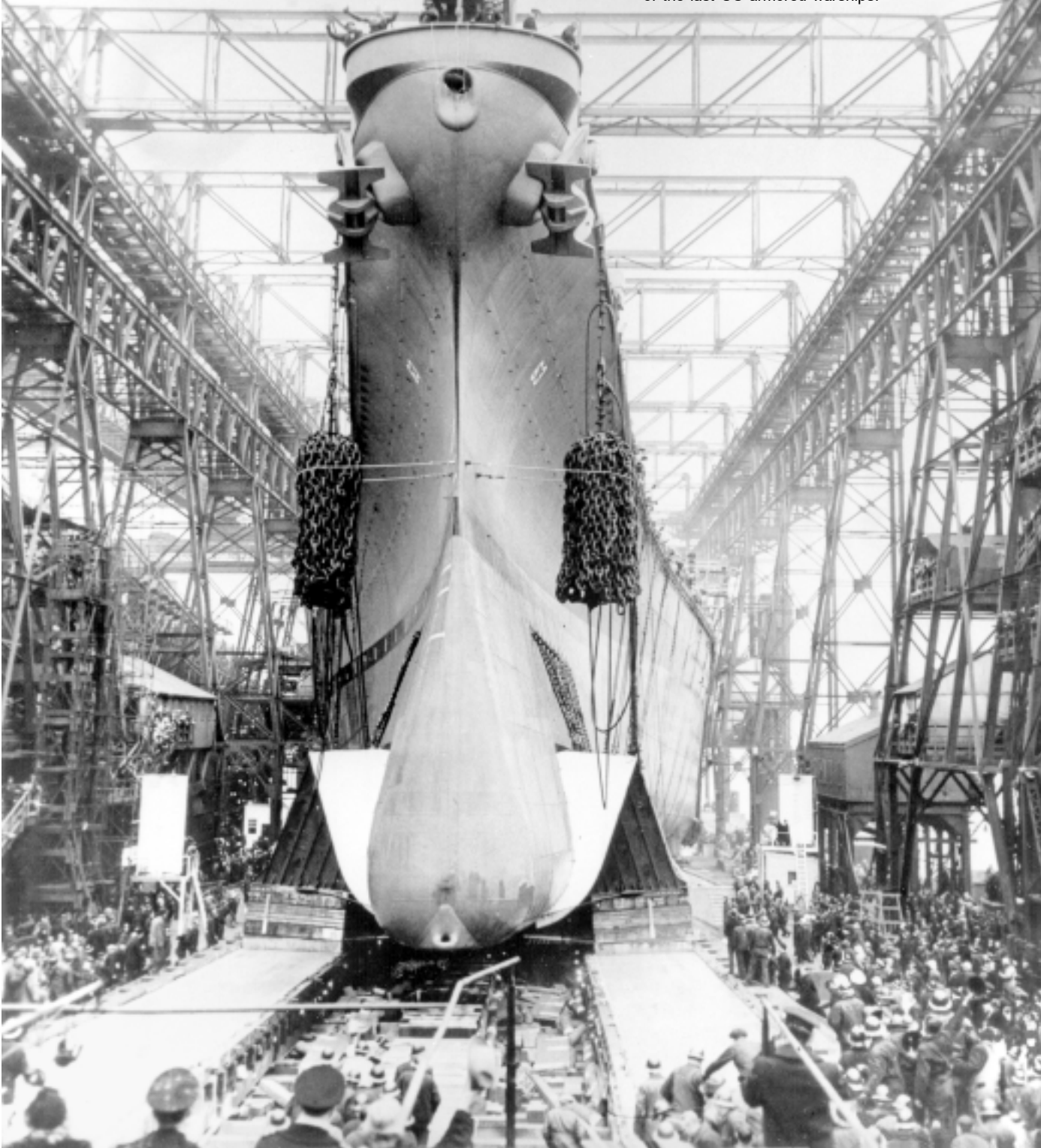
During the Gulf War, on two occasions, USS *Wisconsin's* gunfire forced Iraqis to surrender. Battleships' impact on Iraqi coastal defenses did not go unnoticed by the Soviets: "Their salvos are producing a 'strong impression' on the Iraqis: they are abandoning their coastal positions and pulling back northward tens of kilometers."<sup>35</sup>

Dominating the 21st-century littoral battle space will be the US military's primary mission. Fire support from the major-caliber guns, like the *Iowa*-class battleships, has proven to be an essential enabler to successfully performing the littoral combat mission to whatever beachhead desired. Extending the arc of battleships' major-caliber guns with extended-range projectiles as far as possible makes infinitely





In 1944, shipyard workers cheer the launching of the USS *Missouri*, one of the last US armored warships.



**Currently, only major-caliber guns have the all-weather reliability, lethality and responsiveness to support tactical operations. Such guns are now found only on the Navy's two mothballed Iowa-class battleships. The 16-inch Mark VII gun shoots 1,900-pound, high-capacity, shore-bombardment projectiles out to 24 miles with flight times under 2 minutes.**

**Sometimes “tactical” is so broadly defined that it is dangerously imprecise. . . . The tactical battle space should be redefined to mirror the zones and sectors assigned to divisions. Associated battle areas—the close fight, main fight, deep battle and rear battle—must specify responsive thresholds because time and distance are interdependent, defining criteria.**

good sense and gives US littoral forces performing operational and strategic maneuver the potential to achieve Sun Tzu’s supreme excellence.

The Navy has determined that the blue-water strategy does not apply in the 21st century and replaced it with a brown-water strategy (littoral warfare). The Navy must ultimately realize that with this shift in strategy comes the primary responsibility to provide troops ashore with accurate, reliable, tactically responsive, high-volume NSFS—under all conditions. Without it, our troops ashore risk needless casualties, being defeated or both.

### One Solution: National Assets

The idea of making *Iowa*-class battleships joint assets as part of a JTF commander’s “go-to-war

toolkit” was first proposed in October 1998 as a workaround to the Navy’s arguments for not maintaining them in active service.<sup>36</sup> First, the Navy must reactivate the battleships. If the bureaucratic resistance is too great, Congress could step in and do three things:

- Declare them national assets.
- Provide a separate, joint funding line for US Joint Forces Command, the headquarters with the mission to operate and maintain these invaluable ships.
- Modify Title III to allow the services’ manpower ceilings to be exceeded by the corresponding amount of personnel assigned operating and maintaining joint weapons.

An 8 July 1995 Senate Armed Services Committee report stated that the *Iowa*-class battleships are our country’s “only remaining potential source of around-the-clock accurate, high volume, heavy fire support” for Marine and Army amphibious and forced-entry operations.<sup>37</sup> Troops ashore are at very high risk without tactically responsive NSFS and the “situation will continue until the DD 21-class destroyers join the fleet in strength [circa 2020].”<sup>38</sup> Integrating the services’ warfighting capabilities achieves a synergy for 21st-century littoral warfare, but synergy will not be achieved without the major-caliber guns from the Navy’s *Iowa*-class battleships. 🐉

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